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(54) GUGGED NONWOVEN FABRIC AND ITS PRODUCTION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide gigged nonwoven fabric by selectively altering the difference of pile length to form the dilour tone pile pattern or the like wherein this nonwoven fabric has the same texture and the same level of the quality as the tufted woven fabric and can be formed to carpet resistance to pile disconnection in no need of latex ceiling and door trim that are regarded as their forming properties are important and provide its production.

SOLUTION: The fiber formulation constituting the nonwoven fabric comprises 50-98wt.% of high-melting polyester staple fiber of 2-50 denier fineness and 2-50wt.% of thermally fusible staple fibers of 1-20 denier finesse having the sheath-core type conjugate structure in which the sheath component is a low-melting copolyester. In addition, this nonwoven fabric has the backing layer of a thermoplastic resin sheet laminated on the back face of the base cloth and has fusion points between the high-melting polyester and the low- melting copolyester.

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CLAIMS

[Claim(s)]

[Claim 1] 50 - 98 % of the weight of high-melting polyester system staple fiber whose fiber combination which constitutes a nonwoven fabric is 2-50 deniers, It comes to include [2 - 50 % of the weight] the 1-20-denier thermal melting arrival nature staple fiber which has the sheath-core mold conjugate structure where a sheath component consists of low-melt point point copoly ester. Furthermore, the pile erection tone nonwoven fabric by which it is having [have a backing layer by the thermoplastics sheet laminated at the base fabric section rear face, and]-welding object of said high-melting polyester and said low-melt point point copoly ester characterized.

[Claim 2] The pile erection tone nonwoven fabric according to claim 1 characterized by carrying out welding of low-melt point point fiber and the high-melting fiber, and being able to fabricate by supplying to a press machine and cooling after a welding object heats a nonwoven fabric at the temperature within the limits of the melting point of high-melting polyester, and the melting point of low-melt point point copoly ester.

[Claim 3] The pile erection tone nonwoven fabric according to claim 1 or 2 which has the melting point of the range whose low-melt point point copoly ester is 90-200 degrees C.

[Claim 4] The pile erection tone nonwoven fabric according to claim 1 to 3 which has the eyes of 200 - 800 g/m² in the condition that the laminating of the nonwoven fabric was carried out.

[Claim 5] In the pile erection tone nonwoven fabric which comes to form the pile which continued all over the front face of a nonwoven fabric, and a part of configuration fiber [at least] of this nonwoven fabric projected It comes to contain thermal melting arrival nature staple fiber as configuration fiber of said nonwoven fabric. And after carrying out the laminating of the fiber aggregate which carried out carding in a cross layer, make a pile form on the whole by the needling machine, and needling is carried out at 1 times or more of a process after that further at least. The manufacture approach of the pile erection tone nonwoven fabric characterized by obtaining the aesthetic property of a tufted carpet tone by making the long part of pile length, and a short part alternatively.

[Claim 6] The manufacture approach of the pile erection tone nonwoven fabric according to claim 5 characterized by 20-degree-C or more softening temperature containing low fiber two to 50% of the weight to the main fiber A of the fiber constituted in the fiber aggregate.

[Claim 7] The manufacture approach of the pile erection tone nonwoven fabric according to claim 5 or 6 characterized by being the range whose pile length difference of a part with the long pile length alternatively obtained in the fiber aggregate and a part with short pile length is 1-50mm.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention by attaching especially the difference of elevation of pile length alternatively about a pile erection tone nonwoven fabric and its manufacture approach In the pile erection tone nonwoven fabric which comes to form the pile ****(ed) by the Di Roar tone etc. Without having quality equivalent to the aesthetic property of the tough TEDDO tone which is textiles, and using a latex etc. further It is related with the pile erection tone nonwoven fabric which is mainly used for the interior material than to which greater importance is attached to moldabilities, such as a carpet by which the hair omission of a pile was prevented, head lining, and a door trim, and which can be fabricated, and its manufacture approach.

[0002]

[Description of the Prior Art] As a conventional pile erection tone nonwoven fabric, the thing as shown in drawing 1 and drawing 2 is known. Moreover, the thing as shown in drawing 3 as a cuff TEDDO carpet is known. Since drawing 1 has the pile 1 ****(ed) [tone / the code tone, / Di Roar] by the front face of the nonwoven fabric base fabric 2 and a pile part is fixed, it is the pile erection tone nonwoven fabric with which a latex consists of a sinking-in layer 3 into which it sank, and this pile erection tone nonwoven fabric is indicated by JP,52-53980,A, JP,61-132667,A, etc.

[0003] Moreover, as what does not use these latexes, drawing 2 shows the example which blended the thermal melting arrival fiber which has the sheath-core structure of tales doses in the pile section 1 and the nonwoven fabric base fabric section 2, and is indicated by Japanese Patent Application No. No. 99125 [seven to]. Furthermore, the general configuration of the tufted carpet which is the textiles which used the secondary base fabric was shown in drawing 3 .

[0004]

[Problem(s) to be Solved by the Invention] However, when the production process became complicated and became cost quantity, since the pile erection tone nonwoven fabric of these former needed to sink in the latex for preventing a hair omission, and also becoming the cause of the increment in weight and using for cars, there was a trouble that the demand of lightweight-izing was conflicting.

[0005] Moreover, the conventional Di Roar tone ****(ed), and then, the top where pile length is short, since the pile erection condition of a pile was random, in comparison with the tufted carpet, it was what is inferior by surface aesthetic property. Furthermore, the conventional tufted carpet had the trouble that a production process becomes complicated and become cost quantity, and a configuration turns up for it to be complicated, and a process became [many / very / cost quantity] since simplification of a production process is difficult since latex spreading for hair omission prevention with a secondary base fabric is indispensable in order to weave in and manufacture the yarn which continued to the secondary base fabric.

[0006] Therefore, this invention is what was made paying attention to such a conventional trouble. With, it can provide by low cost. the process which a latex was not needed, but the omission of a pile could be prevented [process] and had the lightweight pile erection tone nonwoven fabric by which the laminating was carried out simplified -- Furthermore, while it is possible to provide cheaply at the tufted carpet conventionally used from the goodness of surface aesthetic property and the process which had equivalent surface quality simplified It aims at offering a pile erection tone nonwoven fabric compatible in surface aesthetic property, the ease of color tone adjustment, quality, and a moldability, and its manufacture approach.

[0007]

[Means for Solving the Problem] 50 - 98 % of the weight of high-melting polyester system staple fiber whose fiber combination whose pile erection tone nonwoven fabric of this invention constitutes a nonwoven fabric is 2-50 deniers, It comes to include [2 - 50 % of the weight] the 1-20-denier thermal melting arrival nature staple

noer which has the sheath-core mold conjugate structure where a sheath component consists of low-melt point point copoly ester. Furthermore, it considers as the having [have a backing layer by the thermoplastics sheet laminated at the base fabric section rear face, and]-welding object of high-melting polyester and said low-melt point point copoly ester description.

[0008] In the piloerection tone nonwoven fabric which comes to form the pile which the manufacture approach of the piloerection tone nonwoven fabric of this invention continued all over the front face of a nonwoven fabric, and a part of configuration fiber [at least] of this nonwoven fabric projected It comes to contain thermal melting arrival nature staple fiber as configuration fiber of said nonwoven fabric. And after carrying out the laminating of the fiber aggregate which carried out carding in a cross layer, make a pile form on the whole by the needling machine, and needling is carried out at 1 times or more of a process after that further at least. By making the long part of pile length, and a short part alternatively, it is characterized by obtaining the aesthetic property of a tufted carpet tone.

[0009] Moreover, this invention contains 2 - 70 % of the weight for fiber with low 20-degree-C or more softening temperature to the main fiber A of the fiber which the thermal melting arrival nature staple fiber used in that case consists of in the fiber aggregate. The pile length difference of a part with the long pile length alternatively obtained in the fiber aggregate and a part with short pile length is 1-50mm, 30 - 98 % of the weight of furthermore, high-melting polyester system staple fiber whose fiber combination which constitutes a nonwoven fabric is 2-50 deniers, It comes to include [2 - 70 % of the weight] the 1-20-denier thermal melting arrival nature staple fiber which has the sheath-core mold conjugate structure where a sheath component consists of low-melt point point copoly ester. Furthermore, it has a backing layer by the thermoplastics sheet laminated at the base fabric section rear face. By supplying to a press machine and cooling, after heating a nonwoven fabric at the temperature within the limits of the melting point of said low-melt point point copoly ester, and the melting point of high-melting polyester It can fabricate by welding low-melt point point fiber and high-melting fiber, and has the melting point of the range said whose low-melt point point copoly ester is 90-200 degrees C, it sets in the condition that the laminating of said nonwoven fabric was carried out, and is 200 - 800 g/m2. It is characterized by having eyes.

[0010] Hereafter, this invention is further explained to a detail. The piloerection tone nonwoven fabric of this invention forms the pile which continued all over the front face of a nonwoven fabric, and a part of configuration fiber [at least] of a nonwoven fabric projected, and is constituted including thermal melting arrival nature staple fiber as configuration fiber of a nonwoven fabric. By using a thermal melting arrival nature staple, it becomes possible by heat-treating a piloerection tone nonwoven fabric to paste up between fiber and to aim at hair omission prevention and wear-resistant improvement. Although coatings, such as a latex, had been performed to the nonwoven fabric rear face in order to acquire these operations conventionally, the coating can become unnecessary by using the above-mentioned thermal melting arrival nature fiber.

[0011] In the manufacture approach of the piloerection tone nonwoven fabric of this invention, since the needling effectiveness as the whole nonwoven fabric runs short and desired reinforcement is not obtained when the difference of elevation of pile length is attached for a needling process at a time and improvement in appearance quality is aimed at, it may split at the time of molding and use, and a tear etc. may occur. Therefore, it becomes possible [aiming at coexistence of reinforcement and appearance] to give desired reinforcement to the whole, to make the difference of elevation of pile length in the 2nd needling or more further, and to aim at improvement in surface aesthetic property by the 1st needling.

[0012] Polyester fiber is used as fiber from which polyester fiber, nylon fiber, a polypropylene fiber, etc. use, and **** constitutes the piloerection tone nonwoven fabric of this invention as fiber which generally constitutes a piloerection tone nonwoven fabric. A polypropylene fiber is [at the economical reason by nylon fiber having an expensive raw material] desirable preferably at neither a hair failure easy nor the point of it being inferior in respect of abrasion resistance, and also being easy to carry out the mold collapse even of after heating compression molding. As high-melting polyester fiber used for the nonwoven fabric original fabric which constitutes the piloerection tone nonwoven fabric of this invention, although especially limitation is not carried out, it is the most desirable from the polyester which has a component according to polyethylene terephthalate or it being cheap, and being easy to come to hand.

[0013] It is possible to use the copoly ester which carried out ring breakage of acid components, such as a terephthalic acid, isophthalic acid, and an adipic acid, diol components, such as ethylene glycol, propylene glycol, a diethylene glycol, triethylene glycol, a polyethylene glycol, and a polypropylene glycol, or the lactone, and copolymerized it as low-melt point point copoly ester used for the sheath of the thermal melting arrival mold which has sheath-core structure on the other hand.

[0014] As polyester used for a core part, although especially limitation is not carried out, the polyester which

has a component according to polyethylene terephthalate or it is cheap, and is the most desirable. It is desirable still more desirable that it is the range of 90-200 degrees C, and the range of the melting point of low-melt point polyester is 105-210 degrees C. When the melting point becomes less than 90 degrees C, there is a problem from which tacking happens by the welding between single yarn in the case of spinning, and also there is a trouble that **** becomes difficult by the welding between multifilament. On the other hand, not only a low-melt point component but a high-melting component may be softened or fused at the time of heating, and it becomes a lump, if the melting point exceeds 200 degrees C, the configuration as fiber may be lost and it may become an appearance top problem, and also whenever [stoving temperature] goes up and shaping becomes difficult.

[0015] It is desirable to consist of conjugate staple fiber of the thermal melting arrival mold with which it has high-melting polyester staple fiber and sheath-core structure, and low-melt point copoly ester is used for the sheath as fiber which constitutes a nonwoven fabric original fabric. After heating by consisting of these fiber at the temperature within the limits of the melting point of low-melt point copoly ester, and the melting point of high-melting polyester, shaping becomes possible by supplying to a press machine and cooling.

[0016] It is desirable still more desirable that it is the range of 1-50mm, and the range of the difference of elevation of pile length in this invention obtained alternatively [a piloerection tone nonwoven fabric] is 2-15mm. If the difference of elevation of pile length is set to less than 1mm, since the difference of elevation will almost be lost, desired ***** becomes difficult and reservation of the aesthetic property of the tough TEDDO tone which appearance quality will hardly be different from the conventional DIROA carpet, and is expected it becomes difficult. Since a hair omission occurs on the other hand since the rate which fiber has projected will become large to fiber length, if the difference of elevation exceeds 50mm, and abrasion resistance also falls, it is not desirable.

[0017] As fiber of high-melting polyester, the range of the range of 2-50 deniers is 4-20 deniers desirable still more preferably. If a problem will arise in the card permeability of a nonwoven fabric chemically-modified degree, and the good nonwoven fabric original fabric of quality will no longer be obtained, if it becomes less than 2 deniers, and it exceeds 50 deniers conversely, since eye the skin of a pile will become coarse, it is not desirable.

[0018] As a cross-section configuration of high-melting polyester fiber, it is also possible to use the fiber by which especially a limit does not have a flat mold besides a round shape, Y mold, a hollow mold, etc., and the side-by-side type was conjugate-ized. As fiber of the thermal melting arrival mold polyester which has sheath-core structure, the range of the range of 1-20 deniers is 2-15 deniers desirable still more preferably. if it exceeds 20 deniers preferably by the reason described above in less than 1 denier -- reduction of a fiber number -- following -- fiber -- indirect -- even if goals also decrease in number and carry out hot forming, sufficient configuration holdout is not acquired. In order to color a predetermined color an original fabric, it is also possible to make the both sides of the above-mentioned polyester or either into the fiber of the arrival type at Hara which adds a pigment in a spinning phase and is colored fiber, and it is also possible to add light-proof material etc.

[0019] In the piloerection tone nonwoven fabric of this invention, although the above-mentioned high-melting polyester fiber and thermal melting arrival mold polyester fiber are mixed and used as fiber which constitutes an original fabric, it uses in 5 - 30% of the weight of the range that the polyester fiber of a thermal melting arrival mold is contained in 2 - 50% of the weight of the range desirable still more preferably. a content -- less than 2-% of the weight **** and fiber -- indirect -- even if it carries out hot forming, sufficient configuration holdout is not acquired except that the hair omission from the pile section occurs frequently while in use, since a goal decreases. if it exceeds 50 % of the weight, and also it will cause a cost rise on the other hand -- fiber -- indirect -- in order that goals may increase in number, the shank of a code tone, the Di Roar tone, and a tough TEDDO tone may change after hot forming, and the failure by after [shaping heating] hair etc. may arise, and an appearance top problem may arise.

[0020] As an original fabric before shaping of the piloerection tone nonwoven fabric of this invention, the eyes in the condition that the laminating was carried out are 200 - 800 g/m². It is desirable that it is the range and it is 250 - 500 g/m² more preferably. It is the range. If the eyes of an original fabric are set to less than 200g, since sufficient configuration holdout's not being acquired or sufficient thickness is not obtained, the part which was transparent after shaping may occur. On the other hand, it is 800 g/m². If it exceeds, ***** with a fork needle, such as a code tone and the Di Roar tone, will become difficult.

[0021]

[Example] Hereafter, this invention is not limited by this although an example explains this invention to a detail further. In addition, the antifriction trial in an example judged pile holdout by 1kg and 500 rotations using the

taper abrasion tester H-38.

[0022] usual polyester staple fiber [of the round-head cross section of 13 denier 51mm length which carried out arrival at Hara to gray as combination of example 1 nonwoven fabric]: -- the polyester staple fiber (110-degree-C melting type):20% of the weight which has the sheath-core structure of 4-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 500g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 5mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyester resin 400 g/m² to the obtained nonwoven fabric. Lamination was carried out and the piloerection tone laminating nonwoven fabric was obtained. The obtained piloerection tone laminating nonwoven fabric original fabric was heated at 180 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping is good, the Taber abrasion test result is also good, the aesthetic property of a tough TEDDO tone was also maintained, and the thing of a request of a color tone was obtained.

[0023] usual polyester staple fiber [of the round-head cross section of 50 denier 51mm length which carried out arrival at Hara to gray as combination of example 2 nonwoven fabric]: -- the polyester staple fiber (90-degree-C melting type):50% of the weight which has the sheath-core structure of 10-denier 51mm length which carried out arrival at Hara to gray similarly 50% of the weight of a thermal melting arrival mold, 600g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 7mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m² to this nonwoven fabric. Lamination was carried out and the piloerection tone laminating nonwoven fabric was obtained. The obtained piloerection tone laminating nonwoven fabric original fabric was heated at 130 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping is good, the Taber abrasion test result is also good, the aesthetic property of a tough TEDDO tone was also maintained, and the thing of a request of a color tone was obtained.

[0024] usual polyester staple fiber [of the round-head cross section of 2 denier 51mm length which carried out arrival at Hara to gray as combination of example 3 nonwoven fabric]: -- the polyester staple fiber (130-degree-C melting type):20% of the weight which has the sheath-core structure of 6-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 400g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 15mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m² to this nonwoven fabric. Lamination was carried out and the piloerection tone laminating nonwoven fabric was obtained. The obtained piloerection tone laminating nonwoven fabric original fabric was heated at 180 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping is good, the Taber abrasion test result is also good, the aesthetic property of a tough TEDDO tone was also maintained, and the thing of a request of a color tone was obtained.

[0025] usual polyester staple fiber [of the round-head cross section of 15 denier 51mm length which carried out arrival at Hara to gray as combination of example 4 nonwoven fabric]: -- the polyester staple fiber (110-degree-C melting type):2% of the weight which has the sheath-core structure of 1-denier 51mm length which carried out arrival at Hara to gray similarly 98% of the weight of a thermal melting arrival mold, 500g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 15mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m² to this nonwoven fabric. Lamination was carried out and the piloerection tone

laminating nonwoven fabric was obtained. The obtained pile erection tone laminating nonwoven fabric original fabric was heated at 180 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping is good, the Taber abrasion test result is also good, the aesthetic property of a tough TEDDO tone was also maintained, and the thing of a request of a color tone was obtained.

[0026] usual polyester staple fiber [of the round-head cross section of 6 denier 51mm length which carried out arrival at Hara to gray as combination of example 5 nonwoven fabric]: -- the polyester staple fiber (150-degree-C melting type):20% of the weight which has the sheath-core structure of 20-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 800g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the pile erection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 8mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m2 to this nonwoven fabric. Lamination was carried out and the pile erection tone laminating nonwoven fabric was obtained. The obtained pile erection tone laminating nonwoven fabric original fabric was heated at 200 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping is good, the Taber abrasion test result is also good, the aesthetic property of a tough TEDDO tone was also maintained, and the thing of a request of a color tone was obtained.

[0027] usual polyester staple fiber [of the round-head cross section of 4 denier 51mm length which carried out arrival at Hara to gray as combination of example 6 nonwoven fabric]: -- the polyester staple fiber (110-degree-C melting type):20% of the weight which has the sheath-core structure of 2-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 200g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the pile erection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 1mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m2 to this nonwoven fabric. Lamination was carried out and the pile erection tone laminating nonwoven fabric was obtained. The obtained pile erection tone laminating nonwoven fabric original fabric was heated at 150 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping is good, the Taber abrasion test result is also good, the aesthetic property of a tough TEDDO tone was also maintained, and the thing of a request of a color tone was obtained.

[0028] usual polyester staple fiber [of the round-head cross section of 40 denier 51mm length which carried out arrival at Hara to gray as combination of example 7 nonwoven fabric]: -- the polyester staple fiber (110-degree-C melting type):20% of the weight which has the sheath-core structure of 6-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 700g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the pile erection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 50mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m2 to this nonwoven fabric. Lamination was carried out and the pile erection tone laminating nonwoven fabric was obtained. The obtained pile erection tone laminating nonwoven fabric original fabric was heated at 180 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping is good, the Taber abrasion test result is also good, the aesthetic property of a tough TEDDO tone was also maintained, and the thing of a request of a color tone was obtained.

[0029] usual polyester staple fiber [of the round-head cross section of 13 denier 51mm length which carried out arrival at Hara to gray as combination of example 8 nonwoven fabric]: -- the polyester staple fiber (200-degree-C melting type):20% of the weight which has the sheath-core structure of 4-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 500g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle

penetrate from one side of the obtained original fabric and forming the pile section, the pile erection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 7mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m² to this nonwoven fabric. Lamination was carried out and the pile erection tone laminating nonwoven fabric was obtained. The obtained pile erection tone laminating nonwoven fabric original fabric was heated at 225 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping is good, the Taber abrasion test result is also good, the aesthetic property of a tough TEDDO tone was also maintained, and the thing of a request of a color tone was obtained.

[0030] usual polyester staple fiber [of the round-head cross section of 1.5 denier 51mm length which carried out arrival at Hara to gray as combination of example of comparison 1 nonwoven fabric]: -- the polyester staple fiber (220-degree-C melting type):60% of the weight which has the sheath-core structure of 25-denier 51mm length which carried out arrival at Hara to gray similarly 40% of the weight of a thermal melting arrival mold, 400g of eyes/, and m² ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the pile erection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 3mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m² to this nonwoven fabric. Lamination was carried out and the pile erection tone laminating nonwoven fabric was obtained. The obtained pile erection tone laminating nonwoven fabric original fabric was heated at 230 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping was not enough and it became clear that the Taber abrasion test result does not have many desirable hair omissions on appearance, either.

[0031] Usual polyester staple fiber of the round-head cross section of 13 denier 51mm length which carried out arrival at Hara to gray as combination of example [of a comparison] 2 nonwoven fabric: It is 100 % of the weight, 400g of eyes/, and m². It carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the pile erection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 10mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m² to this nonwoven fabric. Lamination was carried out and the pile erection tone laminating nonwoven fabric was obtained. The obtained pile erection tone laminating nonwoven fabric original fabric was heated at 200 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The configuration holdout after shaping was not enough and it became clear that the Taber abrasion test result does not have many desirable hair omissions on appearance, either.

[0032] usual polyester staple fiber [of the round-head cross section of 13 denier 51mm length which carried out arrival at Hara to gray as combination of example of comparison 3 nonwoven fabric]: -- the polyester staple fiber (70-degree-C melting type):20% of the weight which has the sheath-core structure of 4-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 300g of eyes/, and m² ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the pile erection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 5mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m² to this nonwoven fabric. Lamination was carried out and the pile erection tone laminating nonwoven fabric was obtained. The obtained pile erection tone laminating nonwoven fabric original fabric was heated at 110 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. After shaping, the Taber abrasion test result did not have many desirable hair omissions on appearance, either, and the thermal melting arrival mold fiber shown in a front face with heating at the time of molding melted too much, many fiber balls were seen, and it became clear that it is not desirable on appearance.

[0033] usual polyester staple fiber [of the round-head cross section of 13 denier 51mm length which carried out arrival at Hara to gray as combination of example of comparison 4 nonwoven fabric]: -- the polyester staple fiber (110-degree-C melting type):20% of the weight which has the sheath-core structure of 4-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival

mold, 300g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 0.5mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m2 to this nonwoven fabric. Lamination was carried out and the piloerection tone laminating nonwoven fabric was obtained. The obtained piloerection tone laminating nonwoven fabric original fabric was heated at 180 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. After shaping, since the surface pile length difference was small, surface aesthetic property was not desirable, and the color tone also became in spots and it became clear that it is not desirable on appearance.

[0034] usual polyester staple fiber [of the round-head cross section of 13 denier 51mm length which carried out arrival at Hara to gray as combination of example of comparison 5 nonwoven fabric]: -- the polyester staple fiber (110-degree-C melting type):20% of the weight which has the sheath-core structure of 4-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 400g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 55mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m2 to this nonwoven fabric. Lamination was carried out and the piloerection tone laminating nonwoven fabric was obtained. The obtained piloerection tone laminating nonwoven fabric original fabric was heated at 22 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. It became clear that the acquired Plastic solid does not have many desirable hair omissions on appearance at the Taber abrasion test result.

[0035] usual polyester staple fiber [of the round-head cross section of 40 denier 51mm length which carried out arrival at Hara to gray as combination of example of comparison 6 nonwoven fabric]: -- the polyester staple fiber (110-degree-C melting type):5% of the weight which has the sheath-core structure of 30-denier 51mm length which carried out arrival at Hara to gray similarly 95% of the weight of a thermal melting arrival mold, 400g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 8mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m2 to this nonwoven fabric. Lamination was carried out and the piloerection tone laminating nonwoven fabric was obtained. The obtained piloerection tone laminating nonwoven fabric original fabric was heated at 230 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. It became clear that is [the acquired Plastic solid] rude, and it is not desirable on appearance at the Taber abrasion test result since [with many / and / hair omissions] the diameter of average fiber of surface fiber is large. [of surface aesthetic property]

[0036] usual polyester staple fiber [of the round-head cross section of 13 denier 51mm length which carried out arrival at Hara to gray as combination of example of comparison 7 nonwoven fabric]: -- the polyester stay bull fiber (110-degree-C melting type):20% of the weight which has the sheath-core structure of 4-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 150g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 2mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m2 to this nonwoven fabric. Lamination was carried out and the piloerection tone laminating nonwoven fabric was obtained. The obtained piloerection tone laminating nonwoven fabric original fabric was heated at 180 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The acquired Plastic solid had many hair omissions at the Taber abrasion test result, and generating of lack of hiding was also seen on the carpet front face, and it became clear that it is not desirable on appearance.

[0037] usual polyester staple fiber [of the round-head cross section of 13 denier 51mm length which carried

out arrival at Hara to gray as combination of example of comparison 8 nonwoven fabric]: -- the polyester staple fiber (110-degree-C melting type):20% of the weight which has the sheath-core structure of 4-denier 51mm length which carried out arrival at Hara to gray similarly 80% of the weight of a thermal melting arrival mold, 1000g of eyes/, and m2 ** -- it carried out. Next, the nonwoven fabric original fabric was obtained for these fiber through a blend, carding, the cross layer, and the needle punch process. Furthermore, after making the fork needle penetrate from one side of the obtained original fabric and forming the pile section, the piloerection tone nonwoven fabric which was made to penetrate a fork needle further again, acquired 30mm of pile length differences, carried out shirring processing, and performed ***** of a tough TEDDO tone was obtained. It is polyethylene resin 400 g/m2 to this nonwoven fabric. Lamination was carried out and the piloerection tone laminating nonwoven fabric was obtained. The obtained piloerection tone laminating nonwoven fabric original fabric was heated at 180 degrees C, it supplied to the press machine with which it was equipped with the die, and the Plastic solid was acquired. The acquired Plastic solid did not have enough configuration holdout because of poor heating, and since a surface pile was an ununiformity, it became clear that it is not desirable on appearance.

[0038]

[Effect of the Invention] As explained above, according to this invention, the latex needed conventionally is not needed. With, it can provide by low cost. the process which the omission of a pile could be prevented [process] and had the lightweight hair tone nonwoven fabric by which the laminating was carried out simplified -- Furthermore, while it is possible to provide cheaply at the tufted carpet conventionally used from the goodness of surface aesthetic property and the process which had equivalent surface quality simplified A piloerection tone nonwoven fabric compatible in surface aesthetic property, the ease of color tone adjustment, quality, and a moldability and its manufacture approach can be offered.

[Translation done.]

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(54) 【発明の名称】 起毛調不織布およびその製造方法

(57) 【要約】

【課題】 バイル長の高低差を選択的に付けることによつて、ディロア調等に柄出しされたバイルを形成してなる起毛調不織布において、織物であるタフテッド調の風合いと同等の品質をもち、さらにラテックス等を用いることなく、バイルの毛抜けが防止されたカーペット、天井、ドアトリム等の成形性が重要視される内装材に主に利用される成形可能な起毛調不織布およびその製造方法を提供すること。

【解決手段】 不織布を構成する繊維配合が2〜50デニールの高融点ポリエステル系ステープル繊維50〜98重量%と、鞘成分が低融点コポリエステルよりなる芯鞘型コンジュゲート構造を有する1〜20デニールの熱融着性ステープル繊維を2〜50重量%とを含んでなり、更に基布部裏面にラミネートされた熱可塑性樹脂シートによるバックング層を持ち、かつ前記高融点ポリエステルと前記低融点コポリエステルとの融着物を有すること特徴とする起毛調不織布。。

【特許請求の範囲】

【請求項1】 不織布を構成する繊維配合が2～50デニールの高融点ポリエステル系ステープル繊維50～98重量%と、鞘成分が低融点コポリエステルよりなる芯鞘型コンジュゲート構造を有する1～20デニールの熱融着性ステープル繊維を2～50重量%とを含んでなり、更に基布部裏面にラミネートされた熱可塑性樹脂シートによるバック層を持ち、かつ前記高融点ポリエステルと前記低融点コポリエステルとの融着物を有することと特徴とする起毛調不織布。

【請求項2】 融着物が高融点ポリエステルの溶融点と低融点コポリエステルの溶融点との範囲内の温度で不織布を加熱した後、プレス機に投入して冷却することにより、低融点繊維と高融点繊維が融着されて成形可能であることを特徴とする請求項1記載の起毛調不織布。

【請求項3】 低融点コポリエステルが90～200℃の範囲の融点を有する請求項1または2記載の起毛調不織布。

【請求項4】 不織布が積層された状態において、200～800g/m²の目付を有する請求項1乃至3記載の起毛調不織布。

【請求項5】 不織布の表面全面に亘って該不織布の構成繊維の少なくとも一部が突出したパイルを形成してなる起毛調不織布において、前記不織布の構成繊維として熱融着性ステープル繊維を含んでなり、かつカーディングした繊維集合体をクロスレイヤにて積層した後、ニードリングマシンで全体的にパイルを形成させ、さらに少なくともその後1回以上の工程でニードリングして、選択的にパイル長の長い部分と短い部分を作り出すことによって、タフテッドカーベット調の風合いを得ることを特徴とする起毛調不織布の製造方法。

【請求項6】 繊維集合体において構成される繊維の主たる繊維Aに対して20℃以上軟化点が低い繊維を2～50重量%含むことを特徴とする請求項5記載の起毛調不織布の製造方法。

【請求項7】 繊維集合体において選択的に得られた長いパイル長を持つ部分と短いパイル長を持つ部分のパイル長差が1～50mmの範囲であることを特徴とする請求項5または6記載の起毛調不織布の製造方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、起毛調不織布およびその製造方法に関するもので、特にパイル長の高低差を選択的に付けることによって、ディロア調等に柄出しされたパイルを形成してなる起毛調不織布において、織物であるタフテッド調の風合いと同等の品質をもち、さらにラテックス等を用いることなく、パイルの毛抜けが防止されたカーベット、天井、ドアトリム等の成形性が重要視される内装材に主に利用される成形可能な起毛調不織布およびその製造方法に関するものである。

【0002】

【従来の技術】従来の起毛調不織布としては、図1および図2に示されるようなものが知られている。また、カフテッドカーベットとしては図3に示されるようなものが知られている。図1は、不織布基布2の表面にコード調やディロア調などの柄出しされたパイル1を有し、パイル部分を固定するためラテックスが含浸された含浸層3よりなる起毛調不織布であり、この起毛調不織布は、特開昭52-53980号公報、特開昭61-132667号公報等で開示されている。

【0003】また、図2は、これらラテックスを用いないものとして、パイル部1および不織布基布部2に同量の芯鞘構造を持つ熱融着繊維を配合した例を示し、特願平7-99125号で開示されている。さらに、図3には、2次基布を用いた織物であるタフテッドカーベットの一般的な構成を示した。

【0004】

【発明が解決しようとする課題】しかしながら、これら従来の起毛調不織布は毛抜けを防止するためのラテックスを含浸をすることが必要であるために製造工程が複雑になりコスト高となる他、重量増加の原因となり車両用に用いる場合は、軽量化の要求とは相容れないという問題点があった。

【0005】また、従来のディロア調の柄出しでは、パイル長が短い上、パイルの起毛状態がランダムであったため、タフテッドカーベットと比較した場合には、表面風合いで劣るものであった。更に、従来のタフテッドカーベットは、2次基布に対して連続した糸を織り込んで製造するため、製造工程が複雑になりコスト高となり、また、2次基布での毛抜け防止のためのラテックス塗布が必須であるため、構成が複雑となる上に、工程が非常に多く、また製造工程の簡略化が困難なためコスト高になるという問題点があった。

【0006】従って本発明は、このような従来の問題点に着目してなされたもので、ラテックスを必要とせず、パイルの抜けが防止でき、且つ軽量の積層された起毛調不織布を簡略化された工程を以て低コストで提供することができ、更に従来表面風合いの良さから用いられてきたタフテッドカーベットと同等表面品質を簡略化された工程で安価に提供することが可能であると共に、表面の風合い、色調調整の容易さ、品質と成形性を両立することのできる起毛調不織布およびその製造方法を提供することを目的とする。

【0007】

【課題を解決するための手段】本発明の起毛調不織布は、不織布を構成する繊維配合が2～50デニールの高融点ポリエステル系ステープル繊維50～98重量%と、鞘成分が低融点コポリエステルよりなる芯鞘型コンジュゲート構造を有する1～20デニールの熱融着性ステープル繊維を2～50重量%とを含んでなり、更に基

布部裏面にラミネートされた熱可塑性樹脂シートによるバック層を持ち、かつ高融点ポリエステルと前記低融点コポリエステルとの融着物を有すること特徴とする。

【0008】本発明の起毛調不織布の製造方法は、不織布の表面全面に亘って該不織布の構成繊維の少なくとも一部が突出したパイルを形成してなる起毛調不織布において、前記不織布の構成繊維として熱融着性ステープル繊維を含んでなり、かつカーディングした繊維集合体をクロスレイヤにて積層した後、ニードリングマシンで全体的にパイルを形成させ、さらに少なくともその後1回以上の工程でニードリングして、選択的にパイル長の長い部分と短い部分を作り出すことによって、タフテッドカーペット調の風合いを得ることを特徴とする。

【0009】また、本発明は、その際用いられる熱融着性ステープル繊維が繊維集合体において構成される繊維の主たる繊維Aに対して20℃以上軟化点が高い繊維を2〜70重量%を含み、繊維集合体において選択的に得られた長いパイル長を持つ部分と短いパイル長を持つ部分のパイル長さ差が1〜50mmであること、さらに、不織布を構成する繊維配合が2〜50デニールの高融点ポリエステル系ステープル繊維30〜98重量%と、鞘成分が低融点コポリエステルよりなる芯鞘型コンジュゲート構造を有する1〜20デニールの熱融着性ステープル繊維を2〜70重量%とを含んでなり、更に基布部裏面にラミネートされた熱可塑性樹脂シートによるバック層を持ち、前記低融点コポリエステルの溶融点と高融点ポリエステルの溶融点との範囲内の温度で不織布を加熱した後、プレス機に投入して冷却することにより、低融点繊維と高融点繊維を融着することにより成形可能であり、かつ、前記低融点コポリエステルが90〜200℃の範囲の融点を有し、前記不織布が積層された状態において、200〜800g/m²の目付を有することを特徴とする。

【0010】以下、本発明について更に詳細に説明する。本発明の起毛調不織布は、不織布の表面全面に亘って不織布の構成繊維の少なくとも一部が突出したパイルを形成しており、不織布の構成繊維として熱融着性ステープル繊維を含んで構成される。熱融着性ステープルを用いることにより、起毛調不織布を熱処理することにより、繊維間を接着して毛抜け防止および耐摩耗性の向上を図ることが可能となる。従来は、これらの作用を得るために、不織布裏面にラテックスなどのコーティングを施していたが、上記熱融着性繊維を用いることによりそのコーティングは不要となり得る。

【0011】本発明の起毛調不織布の製造方法において、ニードリング工程を1度でパイル長の高低差を付けて見栄え品質の向上を図った場合には、不織布全体としてのニードリング効果が不足し、所望の強度が得られないため、成型時および使用時に裂け、破れ等が発生する

可能性がある。そのため、1回目のニードリングにより、所望の強度を全体に与え、更に、2度目以上のニードリングにてパイル長の高低差を作り出し表面風合いの向上を図ることが、強度と見栄えの両立を図ることが可能となる。

【0012】一般に起毛調不織布を構成する繊維としては、ポリエステル繊維、ナイロン繊維、ポリプロピレン繊維等が用いられが、本発明の起毛調不織布を構成する繊維としては、ポリエステル繊維を使用する。ナイロン繊維は原料が高いことによる経済的な理由で好ましくなく、ポリプロピレン繊維は、毛倒れ易さや耐摩耗性の点で劣るほか、加熱圧縮成形後も型崩れし易いという点で好ましくない。本発明の起毛調不織布を構成する不織布原反に用いる高融点のポリエステル繊維としては、特に限定はされないが、ポリエチレンテレフタレートまたはそれに準ずる成分を有するポリエステルが安価で入手しやすいことから最も好ましい。

【0013】一方、芯鞘構造を有する熱融着型の鞘部に用いられる低融点コポリエステルとしては、テレフタル酸、イソフタル酸、アジピン酸等の酸成分とエチレングリコール、プロピレングリコール、ジエチレングリコール、トリエチレングリコール、ポリエチレングリコール、ポリプロピレングリコール等のジオール成分、またはラク톤を開環して共重合したコポリエステル等を用いることが可能である。

【0014】芯部に用いるポリエステルとしては、特に限定はされないが、ポリエチレンテレフタレートまたはそれに準ずる成分を有するポリエステルが安価で最も好ましい。低融点ポリエステルの融点は90〜200℃の範囲であることが好ましく、更に好ましくは105〜210℃の範囲である。融点が90℃未満になると、紡糸の際に単糸間融着によりタッキングが起こる問題があるほか、マルチフィラメント間の融着によって解繊が困難になるという問題点がある。一方、融点が200℃を超えると、加熱時に低融点成分だけでなく高融点成分も軟化または溶解する可能性があり、塊となって繊維としての形状を失い、見栄え上問題となる場合があるほか、加熱温度が上昇し成形が困難になる。

【0015】不織布原反を構成する繊維としては、高融点のポリエステルステープル繊維と芯鞘構造を有し鞘部に低融点コポリエステルが用いられている熱融着型のコンジュゲートステープル繊維で構成されていることが望ましい。これら繊維にて構成されることにより、低融点コポリエステルの溶融点と高融点ポリエステルの溶融点との範囲内の温度で加熱した後、プレス機に投入して冷却することにより成形可能となる。

【0016】本発明における、起毛調不織布の選択的に得られたパイル長の高低差は1〜50mmの範囲であることが好ましく、更に好ましくは2〜15mmの範囲である。パイル長の高低差が1mm未満となると、高低差

がほとんどなくなるため、所望の柄出しが困難となり、見栄え品質が従来のディロアカーペットとほとんど変わらなくなり、望まれるタフテッド調の風合いの確保が困難となる。一方、高低差が50mmを超えると、繊維が突出している割合が繊維長に対して大きくなるため、毛抜けが発生し、また、耐摩耗性も低下するため好ましくない。

【0017】高融点ポリエステル繊維としては2〜50デニールの範囲が好ましく、更に好ましくは、4〜20デニールの範囲である。2デニール未満になると、不織布化工程におけるカード通過性に問題が生じ、品質の良好な不織布原反が得られなくなる可能性があり、逆に50デニールを超えると、パイルの肌目が粗くなるので好ましくない。

【0018】高融点ポリエステル繊維の断面形状としては、丸形、他、扁平型、Y型、中空型等、特に制限はなく、またサイドバイサイドタイプのコンジュゲート化された繊維を用いることも可能である。芯鞘構造を有する熱融着型ポリエステルの繊維としては1〜20デニールの範囲が好ましく、更に好ましくは、2〜15デニールの範囲である。1デニール未満では上記した理由で好ましくなく、20デニールを超えると、繊維本数の減少に伴って繊維間接着点も減少し、加熱成形しても十分な形状保持性が得られない。原反に所定の色を着色するために上記ポリエステルの双方またはどちらか一方を紡糸段階で顔料を添加して繊維に着色する原着タイプの繊維とすることも可能であり、また、耐光材等を添加することも可能である。

【0019】本発明の起毛調不織布において、原反を構成する繊維としては、上記高融点ポリエステル繊維と熱融着型ポリエステル繊維を混合して用いるが、熱融着型のポリエステル繊維が2〜50重量%の範囲で含まれていることが好ましく、更に好ましくは5〜30重量%の範囲で用いる。含有量が2重量%未満になると、繊維間接着点が少なくなるため、使用中にパイル部からの毛抜けが頻繁に発生する他、加熱成形しても十分な形状保持性が得られない。一方、50重量%を超えると、コストアップを招く他、繊維間接着点が増えるためにコード調、ディロア調、タフテッド調の柄が加熱成形後に変化し、また、成形加熱後毛倒れなどが生じる可能性があり、見栄え上問題が生じる可能性がある。

【0020】本発明の起毛調不織布の成形前の原反としては、積層された状態での目付は、200〜800g/m²の範囲であることが好ましく、より好ましくは250〜500g/m²の範囲である。原反の目付が200g未満になると、十分な形状保持性が得られないばかりか十分な厚みが得られないため成形後に透けた部分が発生する可能性もある。一方、800g/m²を超えると、フォークニードルによるコード調やディロア調等の柄出しが困難になる。

【0021】

【実施例】以下、本発明を実施例によって更に詳細に説明するが、本発明はこれによって限定されるものではない。尚、実施例中の耐摩耗試験は、テーバー摩耗試験機H-38を用い、1kg、500回転でパイル保持性を判定した。

【0022】実施例1

不織布の配合としては、グレーに原着した13デニール51mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した4デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：20重量%、目付500g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に、得られた原反の片側からフォークニードルを貫通させてパイル部を形成した後、更に再度フォークニードルを貫通させてパイル長差5mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。得られた不織布にポリエステル樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を180℃に加熱し、成形型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は良好で、テーバー摩耗試験結果も良好であり、タフテッド調の風合いも保たれ、色調も所望のものが得られた。

【0023】実施例2

不織布の配合としては、グレーに原着した50デニール51mm長の丸断面の通常ポリエステルステープル繊維：50重量%、同様にグレーに原着した10デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（90℃溶融タイプ）：50重量%、目付600g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてパイル部を形成した後、更に再度フォークニードルを貫通させてパイル長差7mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を130℃に加熱し、成形型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は良好で、テーバー摩耗試験結果も良好であり、タフテッド調の風合いも保たれ、色調も所望のものが得られた。

【0024】実施例3

不織布の配合としては、グレーに原着した2デニール51mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した6デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（130℃溶融タイプ）：20重量%、目付4

00 g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差15 mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400 g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を180℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は良好で、テーパー摩耗試験結果も良好であり、タフテッド調の風合いも保たれ、色調も所望のものが得られた。

【0025】実施例4

不織布の配合としては、グレーに原着した15デニール51 mm長の丸断面の通常ポリエステルステープル繊維：98重量%、同様にグレーに原着した1デニール51 mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：2重量%、目付500 g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差15 mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400 g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を180℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は良好で、テーパー摩耗試験結果も良好であり、タフテッド調の風合いも保たれ、色調も所望のものが得られた。

【0026】実施例5

不織布の配合としては、グレーに原着した6デニール51 mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した20デニール51 mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（150℃溶融タイプ）：20重量%、目付800 g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差8 mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400 g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を200℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は良好で、テーパー摩耗試験結果も良好であり、タフテッド調の風合いも保た

れ、色調も所望のものが得られた。

【0027】実施例6

不織布の配合としては、グレーに原着した4デニール51 mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した2デニール51 mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：20重量%、目付200 g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差1 mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400 g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を150℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は良好で、テーパー摩耗試験結果も良好であり、タフテッド調の風合いも保たれ、色調も所望のものが得られた。

【0028】実施例7

不織布の配合としては、グレーに原着した40デニール51 mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した6デニール51 mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：20重量%、目付700 g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差50 mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400 g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を180℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は良好で、テーパー摩耗試験結果も良好であり、タフテッド調の風合いも保たれ、色調も所望のものが得られた。

【0029】実施例8

不織布の配合としては、グレーに原着した13デニール51 mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した4デニール51 mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（200℃溶融タイプ）：20重量%、目付500 g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差

7mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を225℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は良好で、テーパー摩耗試験結果も良好であり、タフテッド調の風合いも保たれ、色調も所望のものが得られた。

【0030】比較例1

不織布の配合としては、グレーに原着した1.5デニール51mm長の丸断面の通常ポリエステルステープル繊維：40重量%、同様にグレーに原着した2.5デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（220℃溶融タイプ）：60重量%、目付400g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてパイル部を形成した後、更に再度フォークニードルを貫通させてパイル長差3mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を230℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は十分でなく、テーパー摩耗試験結果も毛抜けが多く見栄え上好ましくないことが判明した。

【0031】比較例2

不織布の配合としては、グレーに原着した1.3デニール51mm長の丸断面の通常ポリエステルステープル繊維：100重量%、目付400g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてパイル部を形成した後、更に再度フォークニードルを貫通させてパイル長差10mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を200℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後の形状保持性は十分でなく、テーパー摩耗試験結果も毛抜けが多く見栄え上好ましくないことが判明した。

【0032】比較例3

不織布の配合としては、グレーに原着した1.3デニール51mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した4デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（70℃溶融タイプ）：20重量%、目付300g/m²とした。次に、これら繊維をブレンド、

カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてパイル部を形成した後、更に再度フォークニードルを貫通させてパイル長差5mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を110℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後、テーパー摩耗試験結果も毛抜けが多く見栄え上好ましくなく、また成型時の加熱により表面にある熱融着型繊維が溶けすぎ、繊維玉が多く見られ、見栄え上好ましくない事が判明した。

【0033】比較例4

不織布の配合としては、グレーに原着した1.3デニール51mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した4デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：20重量%、目付300g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてパイル部を形成した後、更に再度フォークニードルを貫通させてパイル長差0.5mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を180℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。成形後、表面のパイル長差が小さいため表面風合いが好ましくなく、また、色調も斑になり、見栄え上好ましくない事が判明した。

【0034】比較例5

不織布の配合としては、グレーに原着した1.3デニール51mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した4デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：20重量%、目付400g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてパイル部を形成した後、更に再度フォークニードルを貫通させてパイル長差5.5mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を22℃に加熱し、成型型の装着されたプレス機に投入して成形体を得た。得られた成形体は、テーパー摩耗試験結果で毛抜けが多く見栄え上好ましくない事が判明し

た。

【0035】比較例6

不織布の配合としては、グレーに原着した40デニール51mm長の丸断面の通常ポリエステルステープル繊維：95重量%、同様にグレーに原着した30デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：5重量%、目付400g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差8mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を230℃に加熱し、成形型の装着されたプレス機に投入して成形体を得た。得られた成形体は、テーパー摩耗試験結果で毛抜けが多く、また、表面繊維の平均繊維径が大きいと、表面風合いが荒く、見栄え上好ましくない事が判明した。

【0036】比較例7

不織布の配合としては、グレーに原着した13デニール51mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した4デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：20重量%、目付150g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差2mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を180℃に加熱し、成形型の装着されたプレス機に投入して成形体を得た。得られた成形体は、テーパー摩耗試験結果で毛抜けが多く、また、カーペット表面に透けの発生も見られ、見栄え上好ましくない事が判明した。

【0037】比較例8

不織布の配合としては、グレーに原着した13デニール

51mm長の丸断面の通常ポリエステルステープル繊維：80重量%、同様にグレーに原着した4デニール51mm長の芯鞘構造を有する熱融着型のポリエステルステープル繊維（110℃溶融タイプ）：20重量%、目付1000g/m²とした。次に、これら繊維をブレンド、カーディング、クロスレイヤー、ニードルパンチ工程を経て、不織布原反を得た。更に得られた原反の片側からフォークニードルを貫通させてバイル部を形成した後、更に再度フォークニードルを貫通させてバイル長差30mmを得、シャーリング処理してタフテッド調の柄出しを行なった起毛調不織布を得た。この不織布にポリエチレン樹脂400g/m²をラミネート加工し、起毛調積層不織布を得た。得られた起毛調積層不織布原反を180℃に加熱し、成形型の装着されたプレス機に投入して成形体を得た。得られた成形体は、加熱不良のため形状保持性が十分でなく、また表面のバイルが不均一のため、見栄え上好ましくない事が判明した。

【0038】

【発明の効果】以上説明したように、本発明によれば、従来必要としたラテックスを必要とせず、バイルの抜けが防止でき、且つ軽量の積層された毛調不織布を簡略化された工程を以て低コストで提供することができ、更に従来表面風合いの良さから用いられてきたタフテッドカーペットと同等表面品質を簡略化された工程で安価に提供することが可能であると共に、表面の風合い、色調調整の容易さ、品質と成形性を両立することのできる起毛調不織布およびその製造方法を提供することができる。

【図面の簡単な説明】

【図1】従来の起毛調不織布の層構成を示す垂直断面図である。

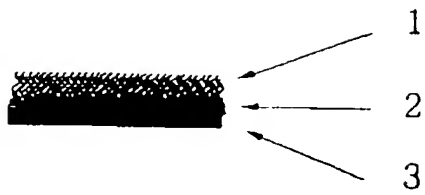
【図2】従来の起毛調不織布の別の層構成を示す垂直断面図である。

【図3】従来のタフテッドカーペットの層構成を示す垂直断面図である。

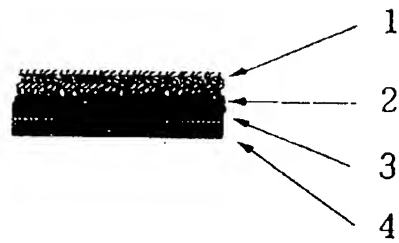
【符号の説明】

- 1 コード調、ディロアの柄部分
- 2 基布層
- 3 ラテックス含浸層
- 4 熱可塑性樹脂シート
- 5 タフテッドカーペットのバイル部分
- 6 2次基布

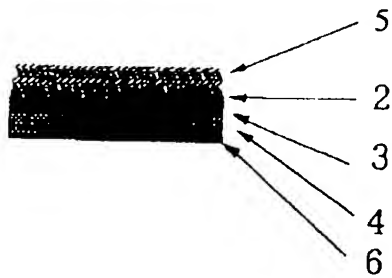
【図1】



【図2】



【図3】



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